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# Claims

[c1] A device for treating spinal deformities, comprising:

a spinal anchoring element adapted to seat first and second spinal fixation elements at a distance spaced apart from one another; and

a closure mechanism adapted to mate to the spinal anchoring element to lock each of the first and second spinal fixation elements in a fixed position relative to the spinal anchoring element.

[c2] The device of claim 1, wherein the spinal anchoring element includes a first recess adapted to receive a first spinal fixation element, and a second recess spaced a distance apart from the first recess and adapted to receive a second spinal fixation element.

[c3] The device of claim 2, wherein the spinal anchoring element includes a central portion positioned between the first and second recesses and adapted to receive a fastening element for mating the anchoring element to bone.

[c4] The device of claim 3, wherein the central portion includes a bore extending therethrough for receiving a

fastening element.

[c5] The device of claim 4, wherein the closure mechanism includes a central portion adapted to receive a locking mechanism for mating the closure mechanism to the spinal anchoring element.

[c6] The device of claim 5, further comprising a fastening element for mating the spinal anchoring element to bone, and a locking mechanism for mating the closure mechanism to the spinal anchoring element.

[c7] The device of claim 6, wherein the fastening element comprises a bone screw, and the locking mechanism comprises a set screw.

[c8] The device of claim 3, wherein the first recess is formed in a first end portion of the spinal anchoring element and the second recess is formed in a second, opposed end portion of the spinal anchoring element.

[c9] The device of claim 8, wherein each end portion includes a superior surface and an inferior surface, the first and second recesses being formed in the superior surface.

[c10] The device of claim 9, further comprising a bone engaging member extending distally from the inferior surface of each of the first and second end portions.

[c11] The device of claim 10, wherein each bone engaging member comprises a spike adapted to extend into bone to prevent rotation of the spinal anchoring element.

[c12] The device of claim 8, wherein the closure mechanism includes a first end portion adapted to lock a spinal fixation element within the first recess, and a second end portion adapted to lock a spinal fixation element within the second recess.

[c13] The device of claim 12, wherein the first and second ends portions on the closure mechanism each include a bore formed therethrough for receiving an engagement mechanism adapted to extend into and engage a spinal fixation element disposed within each of the first and second recesses in the spinal anchoring element.

[c14] The device of claim 13, further comprising first and second engagement mechanisms, each engagement mechanism including a proximal, threaded portion adapted to mate with corresponding threads formed within the bore in the closure mechanism, and a distal pin member adapted to extend into a spinal fixation element positioned in each of the first and second recesses.

[c15] The device of claim 1, further comprising first and second spinal fixation elements adapted to be disposed be-

tween the spinal anchoring element and the closure mechanism.

[c16] The device of claim 15, wherein each spinal fixation element comprises a flexible fixation element.

[c17] The device of claim 15, wherein each spinal fixation element is formed from a bioabsorbable material.

[c18] The device of claim 2, wherein each recess has a substantially concave shape.

[c19] The device of claim 2, wherein each recess includes at least one protrusion formed therein and adapted to extend into and engage a spinal fixation element positioned therein.

[c20] The device of claim 2, wherein the closure mechanism includes at least one protrusion formed thereon and adapted to extend into and engage a spinal fixation element disposed in each of the first and second recesses formed in the spinal anchoring element.

[c21] A medical system for treating spinal deformities, comprising:
first and second flexible spinal fixation elements;
a plurality of spinal anchoring devices adapted to mate to a plurality of vertebrae and to engage the first and

second spinal fixation elements such that the first and second spinal fixation elements can be tensioned between the plurality of spinal anchoring devices to adjust a position of the plurality of vertebrae in both a sagittal plane and a coronal plate when the plurality of spinal anchoring devices are implanted in a plurality of vertebrae.

[c22] The system of claim 21, wherein at least one of the plurality of spinal anchoring devices includes a spinal anchoring element and a closure mechanism adapted to mate to the spinal anchoring element to lock the first and second flexible spinal fixation elements therein.

[c23] The system of claim 22, wherein the spinal anchoring element and the closure mechanism each include first and second recesses formed therein for seating the first and second spinal fixation elements therebetween.

[c24] The system of claim 23, wherein the closure mechanism includes first and second bores formed therein and configured to receive an engagement mechanism adapted to extend into and engage the first and second spinal fixation elements.

[c25] The system of claim 23, wherein the first recess in each of the spinal anchoring element and closure mechanism is spaced a distance apart from the second recess in

each of the spinal anchoring element and closure mechanism.

[c26] The system of claim 25, further comprising a bore extending through the closure mechanism and spinal anchoring element for receiving a fastening element adapted to mate the spinal anchoring element to bone, and a locking mechanism adapted to mate the closure mechanism to the spinal anchoring element.

[c27] The system of claim 26, wherein the fastening element comprises a bone screw, and the locking mechanism comprises a set screw.

[c28] The system of claim 26, wherein the bore in the closure mechanism and spinal anchoring element is positioned between the first and second recesses.

[c29] The system of claim 25, wherein the first recess is formed in a first end portion of each of the spinal anchoring element and the closure mechanism, and the second recess is formed in a second, opposed end portion of each of the spinal anchoring element and the closure mechanism.

[c30] The system of claim 29, wherein the first and second recesses have a substantially concave shape.

[c31] The system of claim 29, wherein the recesses are formed in an inferior surface of the closure mechanism and a superior surface of the spinal anchoring element.

[c32] The system of claim 31, wherein the first and second recesses in at least one of each closure mechanism and each spinal fixation element includes at least one protrusion formed therein for extending into and engaging the first and second spinal fixation elements.

[c33] The system of claim 21, further comprising at least one bone engaging member formed on at least one of the plurality of spinal anchoring devices for extending into bone to prevent rotation of the spinal anchoring device relative thereto.

[c34] The system of claim 21, wherein the first and second spinal fixation elements are flexible.

[c35] The system of claim 21, wherein the first and second spinal fixation elements are formed from a bioabsorbable material.

[c36] A non-fusion spinal anchoring device for treating spinal deformities, comprising:
an anchoring element adapted to seat an elongate element;
an engagement mechanism adapted to mate to the an-

choring element to seat an elongate element within the anchoring element; and

at least one protrusion formed on at least one of the anchoring element and the engagement mechanism for extending into and engaging an elongate element disposed within the anchoring element to prevent sliding movement of the elongate element relative to the anchoring element and the engagement mechanism.

[c37] The device of claim 36, wherein the elongate element is flexible.

[c38] The device of claim 36, wherein the engagement mechanism includes a proximal threaded portion adapted to mate with corresponding threads formed on the anchoring element, and wherein the at least one protrusion extends distally from the proximal threaded portion.

[c39] The device of claim 38, wherein the anchoring element includes a proximal U-shaped member defining a recess for seating an elongate element, and a distal bone-engaging portion.

[c40] The device of claim 39, wherein the distal bone-engaging portion comprises a bone screw.

[c41] The device of claim 39, wherein the proximal U-shaped member includes threads formed therein for mating with

the proximal threaded portion of the engagement mechanism.

[c42] The device of claim 36, wherein the engagement mechanism includes a single protrusion formed thereon in the form of a spike.

[c43] A non-fusion spinal anchoring device for treating spinal deformities, comprising:
a spinal anchoring element adapted to seat first and second spinal fixation elements;
at least one closure mechanism adapted to mate to the spinal anchoring element to lock the first and second spinal fixation elements therein; and
at least one protrusion formed on at least one of the spinal anchoring element and the at least one closure mechanism and effective to prevent sliding movement of the first and second spinal fixation elements relative to the spinal anchoring element.

[c44] The device of claim 43, further comprising at least one bone-engaging member formed on the spinal anchoring element and adapted to extend into bone to prevent rotation of the spinal anchoring element relative to the bone.

[c45] A method for correcting spinal deformities, comprising:

implanting a plurality of anchoring devices within a plurality of adjacent vertebrae in a spinal column;

coupling first and second elongate elements to the plurality of anchoring devices such that the first and second elongate elements are spaced a distance apart from one another; and

locking the first and second elongate elements relative to the plurality of anchoring devices to selectively tension the first and second elongate elements between the plurality of anchoring devices, thereby adjusting a position of the plurality of adjacent vertebrae in the spinal column relative to one another.

[c46] The method of claim 45, wherein the plurality of adjacent vertebrae are adjusted along both a sagittal plane and a coronal plane of a patient's body.

[c47] The method of claim 45, wherein at least one of the plurality of anchoring devices includes a spinal anchoring element and a closure mechanism adapted to mate to the spinal anchoring element to lock the first and second elongate elements therein.

[c48] The method of claim 47, wherein the spinal anchoring element and the closure mechanism each include first and second recesses formed therein for seating the first and second spinal fixation elements therebetween.

[c49] The method of claim 45, wherein the first and second elongate elements are flexible.

[c50] The method of claim 49, wherein the anchoring device includes at least one protrusion that is adapted to extend into the first elongate element and at least one protrusion that is adapted to extend into the second elongate element, the protrusions being effective to prevent sliding movement of the elongate elements relative to each anchoring device.

[c51] A non-fusion method for correcting spinal deformities, comprising:
implanting a plurality of spinal anchoring devices in a plurality of vertebrae, and fixedly coupling first and second fixation flexible fixation elements to the plurality of spinal anchoring devices such that segmental tension is applied between the anchoring devices to adjust a position of the plurality of vertebrae in both a coronal plane and a sagittal plane of a patient's body.

[c52] The method of claim 51, wherein at least one of the plurality of spinal anchoring devices includes an anchoring element adapted to mate to a vertebra, and a closure mechanism adapted to lock each of the first and second flexible fixation elements in a fixed position relative to

the anchoring element.